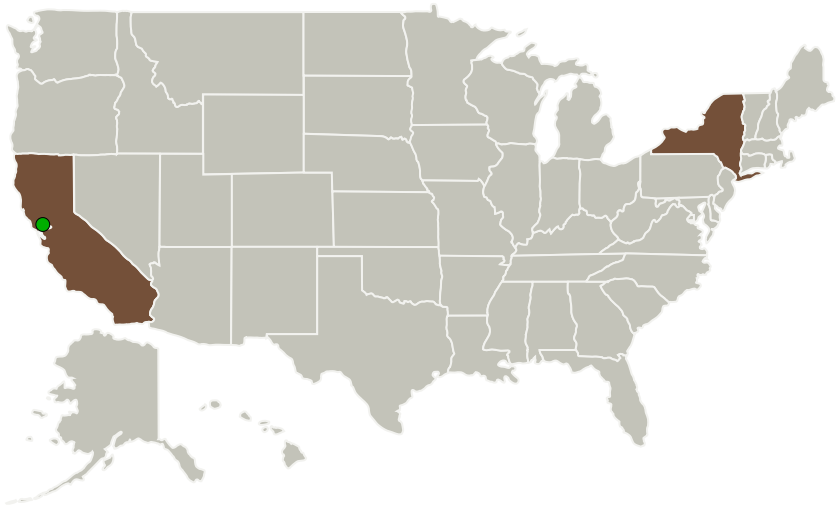
In Situ Diagnostic Sensors for Thermal Protection Systems, Phase I

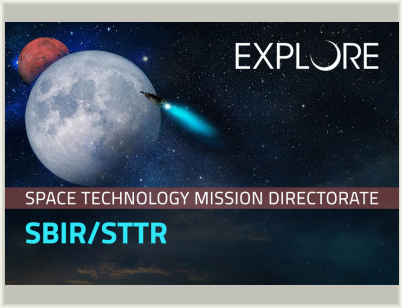
Completed Technology Project (2011 - 2011)

Project Introduction

Low-profile, embedded sensors are proposed for condition monitoring and health management (HM) of thermal protection systems. The sensors will be fabricated using a high precision Direct Write (DW) process based upon thermal spray, affording them the advantages of high temperature tolerance, reproducibility, durability, and materials compatibility. In-situ sensing of temperature, heat flux, and surface recession will be demonstrated per the performance requirements specified for thermal protection systems. Relevant testing configurations will employ high temperature furnaces and flame rigs, specifically to validate sensor functionality, accuracy, and survivability. Sensor compatibility with TPS representative materials will also be considered to ensure seamless integration for rapid technology deployment. Having demonstrated their diagnostic capabilities, combining the sensors with DAQ and HM infrastructures would form the cornerstone of a potential Phase II, continuing application-specific development while expanding to address HM integration issues.

Primary U.S. Work Locations and Key Partners





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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
MesoScribe Technologies, Inc.	Lead Organization	Industry	Setauket, New York
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	New York

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Summary: In-situ Diagnostic Sensors for Thermal Protection System s, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138630)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

MesoScribe Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

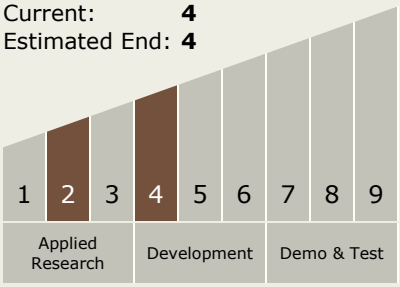
Carlos Torrez

Principal Investigator:

Rob Greenlaw

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.2 Test and Qualification
    - TX13.2.7 Test Instruments and Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System